

**THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	
Inventors: Takaaki SHIMADA et al.	:
	:
U.S. Patent Application No. 10/764,589	: Group Art Unit: 3761
:	
Filed: January 27, 2004	: Examiner: CHIVONNE LAURIE EVANS
:	
For: PANTS-TYPE DISPOSABLE WEARING ARTICLE	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attn: BOARD OF PATENT APPEALS AND INTERFERENCES

BRIEF ON APPEAL

Further to the Notice of Appeal filed March 19, 2008, in connection with the above-identified application on appeal, herewith is Appellant's Brief on Appeal. A credit card authorization form is attached.

To the extent necessary, Appellant hereby requests any required extension of time under 37 C.F.R. §1.136 and hereby authorizes the Commissioner to charge any required fees not otherwise provided for to Deposit Account No. 07-1337.

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I. Real Party in Interest

The real party in interest in this appeal is UNI-CHARM Corporation of 182 Shimobun, Kinsei-cho, Shikokuchuo-shi, Ehime-ken, JAPAN.

II. Related Appeals and Interferences

There are no related appeals and/or interferences.

III. Status of Claims

A. Total Number of Claims in Application

1. There are a total of 22 claims in the application, which are identified as claims 1-22.

B. Status of all the Claims

1. Claims cancelled: claims 1-3, 7-10 and 17
2. Claims withdrawn from consideration but not cancelled: none
3. Claims pending: claims 4-6, 11-16, 18-22
4. Claims allowed: none
5. Claims rejected: claims 1-22

C. Claims on Appeal

Claims on appeal are claims 4-6, 11-16, 18-22 as rejected by the Office Action dated December 19, 2007.

IV. Status of Amendments

No amendments after final have been filed.

V. Summary of Claimed Subject Matter

For the purpose of this appeal brief only, the claimed subject matter will be explained herein below with references to the specification by page and line number, and to the drawings by reference characters.

Independent **claim 4** is directed to a pants-type disposable wearing article (1A in FIG. 1 or 1B in FIG. 7), comprising:

a liquid-impervious base sheet (2, FIGs. 4 and 10) defining front (6, FIGs. 2 and 8) and rear (8, FIGs. 2 and 8) waist regions **opposed** to each other and a crotch region (7, FIGs. 2 and 8) extending in a longitudinal direction (M, FIGs. 2 and 8) of said article between said front and rear waist regions (6, 8);¹

a liquid-absorbent panel (3, FIGs. 4 and 10) extending over said crotch region (7) and further into said front and rear waist regions (6, 8);²

said base sheet (3) having, in said front and rear waist regions (6, 8), a waist-surrounding end zone (9, FIGs. 2 and 8) extending in a transverse direction (L, FIGs. 2 and 8) of said article, a pair of waist lateral zones (10, FIGs. 2 and 8) extending in the longitudinal direction (M) and, in said crotch region (7), a pair of crotch lateral zones (11, FIGs. 2 and 8) extending in leg-surrounding directions (N, FIGs. 1 and 7), respectively;³

said base sheet (2) being provided with

¹ See, for example, page 11, lines 6-7 and 11-13.

² See, for example, page 11, line 7.

³ See, for example, page 11, lines 13-20.

a waist-surrounding first elastic member (18, FIGs. 2 and 8) extending in the transverse direction (L) along said waist-surrounding end zone (9) and being contractible in said transverse direction (L),⁴

a plurality of waist-surrounding second elastic members (19, FIGs. 2 and 8) lying below said first elastic members (18) and being contractible in said transverse direction (L),⁵ and

a plurality of leg-surrounding elastic members (23, FIGs. 2 and 8) extending along said crotch lateral zones (11) in the leg-surrounding directions (N), respectively, and being contractible in said leg-surrounding directions (N), respectively;⁶

said second elastic members (19) being located in said crotch region (7) and at least one of said front and rear waist regions (6, 8) and spaced apart one from another by a predetermined interval in said longitudinal direction (M);⁷ and

said waist lateral zones (10) being connected together to form a waist-hole (4, FIGs. 1 and 7) and a pair of leg-holes (5, FIGs. 1 and 7);⁸

wherein

each of said second elastic members (19) has

fixed end portions (21, FIGs. 2 and 8) secured to said waist lateral zones (10) and said crotch lateral zones (11) in vicinities of respective side edges (12, FIGs. 2 and 8) of said lateral zones (10, 11),⁹ and

⁴ See, for example, page 12, lines 15-24.

⁵ See, for example, page 13, lines 1-3.

⁶ See, for example, page 14, lines 1-10.

⁷ See, for example, page 13, lines 3-10.

a free middle portion (22, FIGs. 2 and 8) connecting and extending between said fixed end portions (21) across said panel (3) in said transverse direction (L) and being directly secured neither to said base sheet (2) nor to said panel (3);¹⁰ and

said free middle portions (22) of said second elastic members (19) and said leg-surrounding elastic members (23) cross, without intersecting, one another in at least said crotch lateral zones (11) and are not secured together at their crossing points (26, FIGs. 3 and 9);¹¹

said base sheet (2) comprises a first sheet (14, FIGs. 5 and 11) and a second sheet (15, FIGs. 5 and 11), said first sheet (14) being sandwiched between said panel (3) and said second sheet (15);¹² and

said first and second elastic members (18, 19) as well as said leg-surrounding elastic members (23) are interposed between said first sheet (14) and said second sheet (15).¹³

Independent **claim 11** is directed to a pants-type disposable wearing article (1B in FIG. 7), comprising:

a liquid-impervious base sheet (2, FIG. 10) defining a front waist region (6, FIG. 8), a rear waist region (8, FIG. 8), and a crotch region (7, FIG. 8)

⁸ See, for example, page 12, lines 1-4 and page 11, lines 8-10.

⁹ See, for example, page 13, lines 12-16.

¹⁰ See, for example, page 13, lines 16-19 and the paragraph bridging pages 19-20.

¹¹ See, for example, page 15, lines 1-7, page 18, lines 9-20, and page 19, lines 1-12.

¹² See, for example, page 12, lines 5-9.

¹³ See, for example, FIGs. 5 and 11.

extending between the front waist region (6) and the rear waist region (8) in a longitudinal direction (M, FIG. 8) of said article, said front and rear waist regions (6, 8) being attached to each other along transversely opposite side edges (12, FIG. 8) thereof so as to form a waist-hole (4, FIG. 7) and a pair of leg-holes (5, FIG. 7);¹⁴

a liquid-absorbent panel (3, FIG. 10) attached to an inner side of said base sheet (2);¹⁵

a first elastic member (18, FIG. 8) extending along a peripheral edge (9, FIG. 8) of said waist-hole (4);¹⁶

a plurality of second elastic members (19, FIG. 8) extending across said liquid-absorbent panel (3) in at least one of said front and rear waist regions (6, 8) and between the transversely opposite side edges (12) of said front and rear waist regions (6, 8);¹⁷ and

a plurality of third elastic members (23, FIG. 8) extending along peripheral edges of said leg-holes (5);¹⁸

wherein

each of said second elastic members (19) has

opposite end portions (21, FIG. 8) located outward beyond transversely opposite side edges (3b, FIG. 8) of said liquid-absorbent panel (3) and being secured to said base sheet (2),¹⁹ and

¹⁴ See, for example, page 11, lines 6-13, and page 12, lines 1-4.

¹⁵ See, for example, page 11, lines 7-8.

¹⁶ See, for example, page 12, lines 15-24.

¹⁷ See, for example, page 13, lines 1-3.

a middle portion (22, FIG. 8) connecting said opposite end portions (21), extending between the transversely opposite side edges (3b) of said liquid-absorbent panel (3), and being free of direct attachment to both said base sheet (2) and said liquid-absorbent panel (3);²⁰ and

the middle portions (22) of said second elastic members (19) cross over said third elastic members (23) and are not secured to said third elastic members (23) at crossover points (26, FIG. 9) of said second and third elastic members (19, 23);²¹

each of said second elastic members (19) is entirely free of direct attachment to said base sheet (2) except at the opposite end portions (21);

said base sheet (2) comprises first (14, FIG. 11) and second (15, FIG. 11) sheets, said first sheet (14) is disposed between said liquid-absorbent panel (3) and said second sheet (15), and said second and third elastic members (19, 23) are disposed between said first and second sheets (14, 15);²²

said base sheet (2) further comprises a third sheet (34, FIG. 11) disposed between said first sheet (14) and said second sheet (15);²³ and

said second elastic members (19) are separated from said third elastic members (23) by said third sheet (34) lying between said second and third elastic members (19, 23), thereby ensuring that said second elastic members

¹⁸ See, for example, page 14, lines 1-10.

¹⁹ See, for example, page 13, lines 12-16.

²⁰ See, for example, page 13, lines 16-19 and the paragraph bridging pages 19-20.

²¹ See, for example, page 15, lines 1-7, page 18, lines 9-20, and page 19, lines 1-12.

²² See, for example, FIG. 11.

²³ See, for example, the paragraph bridging pages 22-23.

(19) are not secured to said third elastic members (23) at the crossover points (26) of said second and third elastic members (19, 23).²⁴

Independent **claim 13** is directed to a pants-type disposable wearing article (1B in FIG. 7), comprising:

a liquid-impervious base sheet (2, FIG. 10) defining a front waist region (6, FIG. 8), a rear waist region (8, FIG. 8), and a crotch region (7, FIG. 8) extending between the front waist region (6) and the rear waist region (8) in a longitudinal direction (M, FIG. 8) of said article, said front and rear waist regions (6, 8) being attached to each other along transversely opposite side edges (12, FIG. 8) thereof so as to form a waist-hole (4, FIG. 7) and a pair of leg-holes (5, FIG. 7);²⁵

a liquid-absorbent panel (3, FIG. 10) attached to an inner side of said base sheet (2);²⁶

a first elastic member (18, FIG. 8) extending along a peripheral edge (9, FIG. 8) of said waist-hole (4);²⁷

a plurality of second elastic members (19, FIG. 8) extending across said liquid-absorbent panel (3) in at least one of said front and rear waist regions (6, 8) and between the transversely opposite side edges (12) of said front and rear waist regions (6, 8);²⁸ and

²⁴ See, for example, page 29, lines 5-7 and page 30, lines 12-22.

²⁵ See, for example, page 11, lines 6-13, and page 12, lines 1-4.

²⁶ See, for example, page 11, lines 7-8.

²⁷ See, for example, page 12, lines 15-24.

²⁸ See, for example, page 13, lines 1-3.

a plurality of third elastic members (23, FIG. 8) extending along peripheral edges of said leg-holes (5);²⁹

wherein

each of said second elastic members (19) has

opposite end portions (21, FIG. 8) located outward beyond transversely opposite side edges (3b, FIG. 8) of said liquid-absorbent panel (3) and being secured to said base sheet (2);³⁰ and

a middle portion (22, FIG. 8) connecting said opposite end portions (21), extending between the transversely opposite side edges (3b) of said liquid-absorbent panel (3), and being free of direct attachment to both said base sheet (2) and said liquid-absorbent panel (3);³¹ and

the middle portions (22) of said second elastic members (19) cross over said third elastic members (23) and are not secured to said third elastic members (23) at crossover points (26, FIG. 9) of said second and third elastic members (19, 23);³² and

said base sheet (2) comprises first (14/34, FIG. 11) and second (15, FIG. 11) sheets, said first sheet (14/34) is disposed between said liquid-absorbent panel (3) and said second sheet (15),³³ and said second elastic members (19) are disposed between said first and second sheets (14/34, 15);³⁴

²⁹ See, for example, page 14, lines 1-10.

³⁰ See, for example, page 13, lines 12-16.

³¹ See, for example, page 13, lines 16-19 and the paragraph bridging pages 19-20.

³² See, for example, page 15, lines 1-7, page 18, lines 9-20, and page 19, lines 1-12.

³³ See, for example, FIG. 10.

³⁴ See, for example, FIG. 11.

said base sheet (2) further comprising bonding spots (35, FIG. 8) joining said first and second sheets (34, 15) in regions located between the middle portions (22) of adjacent said second elastic members (19), said bonding spots (35) limiting displacement of the middle portions (22) of said second elastic members (19) in the longitudinal direction (M) of said article without affecting contraction of said middle portions (22) in a transverse direction (L, FIG. 8) of said article.³⁵

Independent **claim 18** is directed to a pants-type disposable wearing article (1A in FIG. 1 and 1B in FIG. 7), comprising:

a liquid-impervious base sheet (2, FIGs. 4 and 10) defining a front waist region (6, FIGs. 2 and 8), a rear waist region (8, FIGs. 2 and 8), and a crotch region (7, FIGs. 2 and 8) extending between the front waist region (6) and the rear waist region (8) in a longitudinal direction (M, FIGs. 2 and 8) of said article, said front and rear waist regions (6, 8) being attached to each other along transversely opposite side edges (12, FIGs. 2 and 8) thereof so as to form a waist-hole (4, FIGs. 1 and 7) and a pair of leg-holes (5, FIGs. 1 and 7);³⁶

a liquid-absorbent panel (3, FIGs. 4 and 10) attached to an inner side of said base sheet (2);³⁷

a first elastic member (18, FIGs. 2 and 8) extending along a peripheral edge (9, FIGs. 2 and 8) of said waist-hole (4);³⁸

³⁵ See, for example, the sentence bridging pages 27-28, page 32, lines 2-12, page 34, lines 5-12, and page 34, line 19 through page 35, line 8.

³⁶ See, for example, page 11, lines 6-13, and page 12, lines 1-4.

³⁷ See, for example, page 11, lines 7-8.

³⁸ See, for example, page 12, lines 15-24.

a plurality of second elastic members (19, FIGs. 2 and 8) extending across said liquid-absorbent panel (3) in at least one of said front and rear waist regions (6, 8) and between the transversely opposite side edges (12) of said front and rear waist regions (6, 8);³⁹ and

a plurality of third elastic members (23, FIGs. 2 and 8) extending along peripheral edges of said leg-holes (5);⁴⁰

wherein

each of said second elastic members (19) has

opposite end portions (21, FIGs. 2 and 8) located outward beyond transversely opposite side edges (3b, FIGs. 2 and 8) of said liquid-absorbent panel (3) and being secured to said base sheet (2);⁴¹ and

a middle portion (22, FIGs. 2 and 8) connecting said opposite end portions (21), extending between the transversely opposite side edges (3b) of said liquid-absorbent panel (3), and being free of direct attachment to both said base sheet (2) and said liquid-absorbent panel (3);⁴² and

the middle portions (22) of said second elastic members (19) cross over said third elastic members (23) and are not secured to said third elastic members (23) at crossover points (26, FIGs. 3 and 9) of said second and third elastic members (19, 23);⁴³ and

³⁹ See, for example, page 13, lines 1-3.

⁴⁰ See, for example, page 14, lines 1-10.

⁴¹ See, for example, page 13, lines 12-16.

⁴² See, for example, page 13, lines 16-19 and the paragraph bridging pages 19-20.

⁴³ See, for example, page 15, lines 1-7, page 18, lines 9-20, and page 19, lines 1-12.

said base sheet (2) comprises first (14, FIGs. 5 and 11) and second (15, FIGs. 5 and 11) sheets, and said second and third elastic members (19, 23) are disposed between said first and second sheets (14, 15);⁴⁴

said base sheet (2) further comprising a plurality of adhesive zones (33, FIGs. 3 and 9) bonding said first and second sheets (14, 15) and end portions (unnumbered, best seen in FIGs. 3 and 9) of said third elastic members (23) together;⁴⁵

each of said adhesive zones (33) being disposed, in the longitudinal direction (M), between the middle portions (22) of one pair of adjacent said second elastic members (19), and, in a transverse direction (L, FIGs. 2 and 8) of said article, between entire said panel (3) on the one hand and one of the end portions (21) of each of said second elastic members (19) in said pair on the other hand.⁴⁶

VI. Grounds of Rejection to be Reviewed on Appeal

The rejection of claims 4-6, 11-16 and 18-22, as being unpatentable under 35 U.S.C. 103(a) over *Okuda* (JP 2001 157690) in view of *Hall et al.* (US 2004/0006323), or further in view of *Posniak et al.* (US 6,045,543) is improper.

⁴⁴ See, for example, FIG. 11.

⁴⁵ See, for example, page 27, lines 15-22 and page 29, lines 1-5.

⁴⁶ See, for example, FIGs. 3 and 9.

VII. Argument

A. Claims 4-6 and 22 are patentable over *Okuda* in view of *Hall*, or further in view of *Posniak*

At the outset, the asserted combination of *Okuda* and *Hall* does not teach or suggest all of Applicants' claim features.

Furthermore, the grounds of rejection constitute an improper reconstruction of Applicants' claimed invention.

Specifically, claim 4 recites, *inter alia*:

"a plurality of leg-surrounding elastic members extending along said crotch lateral zones in the leg-surrounding directions, respectively, and being contractible in said leg-surrounding directions."
(Emphasis added).

The Examiner asserts that *Okuda* discloses the recited leg-surrounding elastic members. Appellants respectfully disagree. The Examiner further relies upon *Hall* to disclose wherein:

"said leg-surrounding elastic members are interposed between said first sheet and said second sheet."

Appellants respectfully disagree with both assertions.

Appellants submit that *Okuda*'s elastic members 61 do not disclose, teach, or suggest leg-surrounding elastic members, as recited in independent claim 4.

Unlike Appellants' recited leg-surrounding elastic members, *Okuda*, as depicted in FIG. 1, appears to only disclose elastic members 61 prolonged in the longitudinal direction of a diaper 1. Appellants respectfully submit that as disclosed by *Okuda*, when the distal ends of the diaper are brought together as a formed diaper, elastic members 61 do not form leg-surround members. More specifically, in order to surround a leg, elastic members 61 must traverse the

perimeter of the curved portion, i.e., the leg surrounding portion, of diaper 1. Because elastic members 61 do not traverse the leg defining portion, elastic members 61 do not disclose, teach, or suggest leg-surrounding elastic members, as recited by Appellants.

The laminate 70, disclosed by *Hall*, similarly fails to suggest the leg-surrounding feature recited by Appellants. As depicted in FIGs. 2 and 3, elastomeric composite 60 comprises elastic strands 64, composite 60 being sandwiched between facing sheets 70, 72 to form laminate 70 of the diaper depicted in FIG. 8. As illustrated in FIG. 8, laminate 70 is not configured as a leg-surrounding material and more specifically, strands 64 are not leg-surrounding members.

Appellants respectfully submit, therefore, that claim 4 is patentable at least due to the failure of *Okuda* and *Hall* to disclose, teach or motivate all claimed features.

Notwithstanding the above presented argument, Appellants respectfully submit that the applied art fails to present any apparent reason to combine references or modify prior art to create the Appellants' allegedly obvious claim elements. It is improper to use the claimed invention as an instruction manual to piece together the teachings of the prior art so that the claimed invention is rendered obvious.

Furthermore, the USPTO's Board of Patent Appeals and Interferences has stated that:

"[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." (In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006) cited with approval in KSR, 550 U.S. at 14).

Appellants respectfully submit that the Examiner's reasoning supporting the combination of *Okuda* and *Hall* is conclusionary⁴⁷ and appears to be based upon improper hindsight reconstruction to pick and choose among isolated disclosures.

Furthermore, notwithstanding the improper combination of *Okuda* and *Hall*, the Examiner alleged that *Hall* teaches a laminate 70 (FIG. 6) that can be used in the leg opening areas of *Okuda*. In the Examiner's combination of *Okuda* and *Hall*, one of the facing sheets 72/74 of *Hall* would necessarily be located between the *Hall* leg elastics 64 and the *Okuda* auxiliary elastic members 21 and prevent the *Hall* leg elastics 64 from being directly attached to the *Okuda* auxiliary elastic members 21 as presently claimed.

Appellants respectfully submit that the Examiner's obviousness rationale is improper because *Hall* does not teach that the whole laminate 70 can be included between component layers of a base sheet, as alleged by the Examiner. The reference only discloses that the elasticized part of laminate 70, i.e., composite 60 (FIG. 4), can be used in expandable areas of the diaper. (See paragraph [0049], last sentence.) Laminate 70, if combined with *Okuda*, could only include the composite 60 between the layers of the base sheet. (See paragraph [0065], last line). Thus, it would only have been obvious, if at all, to incorporate the *Hall* composite 60 (rather than the entire laminate 70) between the sheets 3 and 5 of *Okuda*. In such resulting structure, there is no disclosure or suggestion that the *Hall* elastic threads 64 would be free of direct attachment with the *Okuda* auxiliary elastic members 21.

Applicants respectfully submit, therefore, that the independent claim 4 is patentable not only due to the failure of *Okuda* in view of *Hall*, to disclose, teach or motivate all recited features of the claims, but are also patentable based upon the improper combination of *Okuda* and *Hall*, wherein the asserted combination

⁴⁷ See, Office Action of December 19, 2007, first paragraph, last sentence "...it would be obvious ...to modify the article of *Okuda* by including the elastomeric composite of *Hall* as an additional layer of the base

of references present no apparent reason to combine references or modify prior art to create the Appellants' allegedly obvious claim elements.

Withdrawal of the rejection of claim 4 is believed appropriate and therefore respectfully requested.

Claims 5-6 and 22 depend variously from independent claim 4 and are likewise patentable over the asserted combination of references art for at least their dependence on an allowable base claim, as well as for the additional features they recite. Accordingly, reversal of this rejection is respectfully requested.

B. Claims 11-12 and 18-21 are patentable over *Okuda* in view of *Hall*

Independent claims 11 and 18 are similar to claim 4 and are patentable at least based upon the argument presented above in regards to claim 4, and incorporated herein. Claims 11 and 18 are further distinguished from *Okuda* and *Hall* in that claims 11 and 18 further recite: "a plurality of third elastic members extending along peripheral edges of said leg-holes," (emphasis added).

Neither *Okuda*, nor *Hall* disclose, teaches, or suggests the above feature.

Applicants respectfully submit, therefore, that the claims are patentable not only due to the failure of *Okuda* in view of *Hall*, to disclose, teach or motivate all recited features of the claims, but as submitted above in regards to claim 4, are also patentable based upon the improper combination of *Okuda* and *Hall*, wherein the asserted combination of references present no apparent reason, other than *conclusions*, to combine references or modify prior art to create the Appellants' allegedly obvious claim elements.

sheet of *Okuda* in the leg and waist areas to impart improved elastic behavior."

Claims 12 and 19-21 depend variously from independent claims 11 and 18 and are likewise patentable over the asserted combination of references art for at least their dependence on an allowable base claim, as well as for the additional features they recite. Accordingly, reversal of this rejection is respectfully requested.

C. Claims 13-16 are patentable over *Okuda* in view of *Hall*

Notwithstanding the improper combination of *Okuda* and *Hall* as presented above regarding claim 4, independent claim 13 is allowable based upon features neither disclosed, nor taught by *Okuda* and *Hall*.

Specifically, independent claim 13 recites wherein "said base sheet further comprising bonding spots joining said first and second sheets in regions located between the middle portions of adjacent said second elastic members, said bonding spots limiting displacement of the middle portions of said second elastic members in the longitudinal direction of said article without affecting contraction of said middle portions in a transverse direction of said article." (Emphasis added).

The Examiner asserts that paragraphs [0014] and [0015] of *Okuda* disclose this feature. Appellants respectfully disagree and submit that nowhere in the cited text does *Okuda* appear to disclose bonding spots, let alone bonding spots as claimed.

For at least these reasons, independent claim 13 is patentable over the asserted combination of references.

Claims 14-16 depend variously from independent claim 13 and are likewise patentable over the asserted combination of references art for at least their dependence on an allowable base claim, as well as for the additional features they recite. Accordingly, reversal of this rejection is respectfully requested.

D. Conclusion

Reversal of the rejection is in order.

Each of the Examiner's rejections has been traversed. Appellants respectfully submit that all claims on appeal are considered patentable over the applied art of record. Accordingly, reversal of the Examiner's Final Rejection is believed appropriate and courteously solicited.

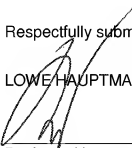
If for any reason this Appeal Brief is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned, Applicant's attorney of record.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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VIII. Claims Appendix

4. A pants-type disposable wearing article, comprising: a liquid-impervious base sheet defining front and rear waist regions opposed to each other and a crotch region extending in a longitudinal direction of said article between said front and rear waist regions;

a liquid-absorbent panel extending over said crotch region and further into said front and rear waist regions;

said base sheet having, in said front and rear waist regions, a waist-surrounding end zone extending in a transverse direction of said article, a pair of waist lateral zones extending in the longitudinal direction and, in said crotch region, a pair of crotch lateral zones extending in leg-surrounding directions, respectively;

said base sheet being provided with

a waist-surrounding first elastic member extending in the transverse direction along said waist-surrounding end zone and being contractible in said transverse direction,

a plurality of waist-surrounding second elastic members lying below said first elastic members and being contractible in said transverse direction, and

a plurality of leg-surrounding elastic members extending along said crotch lateral zones in the leg-surrounding directions, respectively, and being contractible in said leg-surrounding directions, respectively;

said second elastic members being located in said crotch region and at least one of said front and rear waist regions and spaced apart one from another by a predetermined interval in said longitudinal direction; and

said waist lateral zones being connected together to form a waist-hole and a pair of leg-holes;

wherein

each of said second elastic members has

fixed end portions secured to said waist lateral zones and said crotch lateral zones in vicinities of respective side edges of said lateral zones, and

a free middle portion connecting and extending between said fixed end portions across said panel in said transverse direction and being directly secured neither to said base sheet nor to said panel; and

said free middle portions of said second elastic members and said leg-surrounding elastic members cross, without intersecting, one another in at least said crotch lateral zones and are not secured together at their crossing points;

said base sheet comprises a first sheet and a second sheet, said first sheet being sandwiched between said panel and said second sheet; and

said first and second elastic members as well as said leg-surrounding elastic members are interposed between said first sheet and said second sheet.

5. The wearing article according to claim 4, wherein:

said base sheet has a third sheet interposed between said first sheet and said second sheet;

said second elastic members are interposed between said first and third sheets or between said second and third sheets;

said leg-surrounding elastic members are interposed between the pair of sheets other than the pair of sheets sandwiching said second elastic members; and

said second elastic members are separated from said leg-surrounding elastic members by said third sheet lying between said second and leg-surrounding elastic members, thereby ensuring that said second elastic members are not secured to said leg-surrounding elastic members at the crossover points of said second and leg-surrounding elastic members.

6. The wearing article according to claim 4, further comprising a plurality of welding spots at which the sheets sandwiching said second elastic members are bonded together;

wherein said welding spots are formed in vicinities of transversely opposite side edges of said panel, lie between each pair of adjacent free middle portions of said second elastic members, and are spaced apart one from another by a predetermined distance in said longitudinal direction.

11. A pants-type disposable wearing article, comprising: a liquid-impervious base sheet defining a front waist region, a rear waist region, and a crotch region extending between the front waist region and the rear waist region in a longitudinal direction of said article, said front and rear waist regions being attached to each other along transversely opposite side edges thereof so as to form a waist-hole and a pair of leg-holes;

a liquid-absorbent panel attached to an inner side of said base sheet;

a first elastic member extending along a peripheral edge of said waist-hole;

a plurality of second elastic members extending across said liquid-absorbent panel in at least one of said front and rear waist regions and between the transversely opposite side edges of said front and rear waist regions; and

a plurality of third elastic members extending along peripheral edges of said leg-holes;

wherein

each of said second elastic members has

opposite end portions located outward beyond transversely opposite side edges of said liquid-absorbent panel and being secured to said base sheet, and

a middle portion connecting said opposite end portions, extending between the transversely opposite side edges of said liquid-absorbent panel, and being free of direct attachment to both said base sheet and said liquid-absorbent panel; and

the middle portions of said second elastic members cross over said third elastic members and are not secured to said third elastic members at crossover points of said second and third elastic members;

each of said second elastic members is entirely free of direct attachment to said base sheet except at the opposite end portions;

said base sheet comprises first and second sheets, said first sheet is disposed between said liquid-absorbent panel and said second sheet, and said second and third elastic members are disposed between said first and second sheets;

said base sheet further comprises a third sheet disposed between said first sheet and said second sheet; and

said second elastic members are separated from said third elastic members by said third sheet lying between said second and third elastic members, thereby ensuring that said second elastic members are not secured to said third elastic members at the crossover points of said second and third elastic members.

12. The article of claim 11, wherein

said second elastic members are disposed between said second sheet and said third sheet;

said base sheet further comprising bonding spots joining said third and second sheets in regions located between the middle portions of adjacent said second elastic members, said bonding spots limiting displacement of the middle portions of said second elastic members in the longitudinal direction of said article without affecting contraction of said middle portions in a transverse direction of said article.

13. A pants-type disposable wearing article, comprising:

a liquid-impervious base sheet defining a front waist region, a rear waist region, and a crotch region extending between the front waist region and the rear waist region in a longitudinal direction of said article, said front and rear waist regions being attached to each other along transversely opposite side edges thereof so as to form a waist-hole and a pair of leg-holes;

a liquid-absorbent panel attached to an inner side of said base sheet;

a first elastic member extending along a peripheral edge of said waist-hole;

a plurality of second elastic members extending across said liquid-absorbent panel in at least one of said front and rear waist regions and between the transversely opposite side edges of said front and rear waist regions; and

a plurality of third elastic members extending along peripheral edges of said leg-holes;

wherein

each of said second elastic members has

opposite end portions located outward beyond transversely opposite side edges of said liquid-absorbent panel and being secured to said base sheet, and

a middle portion connecting said opposite end portions, extending between the transversely opposite side edges of said liquid-absorbent panel, and being free of direct attachment to both said base sheet and said liquid-absorbent panel; and

the middle portions of said second elastic members cross over said third elastic members and are not secured to said third elastic members at crossover points of said second and third elastic members; and

said base sheet comprises first and second sheets, said first sheet is disposed between said liquid-absorbent panel and said second sheet, and said second elastic members are disposed between said first and second sheets;

said base sheet further comprising bonding spots joining said first and second sheets in regions located between the middle portions of adjacent said second elastic members, said bonding spots limiting displacement of the middle portions of said second elastic members in the longitudinal direction of said article without affecting contraction of said middle portions in a transverse direction of said article.

14. The article of claim 13, wherein some of said bonding spots are arranged along said transversely opposite side edges of said panel and between entire said panel on the one hand and the end portions of said second elastic members on the other hand.

15. The article of claim 13, wherein said base sheet, in an entire region underlying said panel, is free of said bonding spots.

16. The article of claim 13, wherein said bonding spots are presented between every pair of adjacent said second elastic members so as to prevent said adjacent second elastic members from forming a bundle with each other.

18. A pants-type disposable wearing article, comprising:

a liquid-impervious base sheet defining a front waist region, a rear waist region, and a crotch region extending between the front waist region and the rear waist region in a longitudinal direction of said article, said front and rear waist regions being attached to each other along transversely opposite side edges thereof so as to form a waist-hole and a pair of leg-holes;

a liquid-absorbent panel attached to an inner side of said base sheet;

a first elastic member extending along a peripheral edge of said waist-hole;

a plurality of second elastic members extending across said liquid-absorbent panel in at least one of said front and rear waist regions and between the transversely opposite side edges of said front and rear waist regions; and

a plurality of third elastic members extending along peripheral edges of said leg-holes;

wherein

each of said second elastic members has

opposite end portions located outward beyond transversely opposite side edges of said liquid-absorbent panel and being secured to said base sheet, and

a middle portion connecting said opposite end portions, extending between the transversely opposite side edges of said liquid-absorbent panel, and being free of direct attachment to both said base sheet and said liquid-absorbent panel; and

the middle portions of said second elastic members cross over said third elastic members and are not secured to said third elastic members at crossover points of said second and third elastic members; and

said base sheet comprises first and second sheets, and said second and third elastic members are disposed between said first and second sheets;

said base sheet further comprising a plurality of adhesive zones bonding said first and second sheets and end portions of said third elastic members together;

each of said adhesive zones being disposed, in the longitudinal direction, between the middle portions of one pair of adjacent said second elastic members, and, in a transverse direction of said article, between entire said panel on the one hand and

one of the end portions of each of said second elastic members in said pair on the other hand.

19. The article of claim 18, wherein each of said adhesive zones is spaced in the longitudinal direction of said article from the middle portions of the adjacent second elastic members between which said adhesive zone is disposed.

20. The article of claim 19, wherein each of said adhesive zones is elongated in the transverse direction of said article, and spaced in said transverse direction from the end portions of the adjacent second elastic members between which said adhesive zone is disposed.

21. The article of claim 20, further comprising
a plurality of further adhesive zones different from the adhesive zones that bond said first and second sheets and the end portions of said third elastic members together, said further adhesive zones bonding the end portions of the second elastic members to the base sheet;

wherein each of said adhesive zones is spaced in said transverse direction from the further adhesive zones at the end portions of the adjacent second elastic members between which said adhesive zone is disposed.

22. The article of claim 5, wherein said third sheet carries printed indicia in a region corresponding to the middle portions of said second elastic members;

said third sheet being disposed between said second elastic member and said second sheet, and secured to said second sheet.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

None.